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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/402,978	02/11/2000	HUGO DE LASA	10914-10	6701

7590

08/13/2003

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EXAMINER

CONLEY, SEAN E

ART UNIT

PAPER NUMBER

1744

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/402,978

Applicant(s)

DE LASA ET AL.

Examiner

Sean E Conley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-13, 19-26 is/are rejected.
- 7) ☒ Claim(s) 14-18 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed April 29, 2003 has been received and considered for examination. Claim 10 has been canceled, new claim 26 has been added and claims 1, 11-13 and 24 have been amended.

Claim Objections

2. Claim 26 is objected to because of the following informalities: The wording of claim 26 is unclear and does not accurately define the invention. Specifically, claim 26 recites, "wherein said venture section comprises an elongate pipe having a convergent section and a divergent section, said divergent having a UV light onto said irradiating means". The examiner believes the applicant meant to incorporate the limitation of claim 14, however it is not clear. Additionally, there is no antecedent basis for "said venture section" or "said irradiating means". Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-9, 11-13, 19, 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 96/37281 in view of Shiki et al. (U.S. Pat. 4,579,194).

WO 96/37281 discloses a bench top air purification device which uses ultraviolet light to activate a photocatalyst such as titanium dioxide (see abstract). The apparatus comprises a housing (1) having an inlet (2) and an outlet (4) for circulating air. The air is circulated by a fan (5) located downstream of the

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ultraviolet light source (13). The air is sucked into the inlet (2) and passes through a planar filter (7) which has a photocatalyst fixed to a fibrous porous support. The filter is activated by an ultraviolet light source (13) and once the air is treated by the filter and irradiated it exits through the outlet (4) (see figures 1-3). It is further disclosed that the outlet (4) may be made smaller than the inlet (2) in order to equalize the system (see page 4, lines 23-26).

The irradiating means (13) is transversely positioned with respect to the gas stream (see figure 1). The titanium dioxide photocatalyst is imbedded within a supported fibrous mesh and the support is a porous plate constructed from a non-corrosive polypropylene fiber. Furthermore, the porous plate support is heated by the ultraviolet light (13) which is also used to activate the titanium dioxide photocatalyst (see figures 7-9 and page 11, line 18 to page 13, line 13). The titanium dioxide photocatalyst is electrostatically bound to the fibrous support, wherein up to 50% by weight of photocatalyst can be loaded onto the support based on the weight of the support (see page 8, line 28- page 9, line 2).

However, WO 96/37281 does not teach or disclose a Venturi section for constraining and increasing the velocity of the gas stream while at the same time creating a suction effect.

Shiki et al. disclose a muffler with a catalyst for removing pollutants from the exhaust gas. The muffler is provided with an exhaust gas inlet pipe (16) which includes a venturi section (20, 21) through which atmospheric air is inducted into the exhaust gas inlet pipe. The exhaust gas discharged from the engine flows through the exhaust gas inlet pipe (16) in which secondary air is

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sucked through the venturi section (22) into the exhaust gas inlet pipe under so-called aspirator action of the venturi section (22) so that the secondary air is mixed with the exhaust gas flowing through the pipe. The gas is then directed through extension pipe (16B) to a honeycomb type catalyst (23) that removes the noxious harmful components of the exhaust gas (see column 3, line 63 to column 4, line 25). This reference has been relied upon to teach that it is well known to incorporate a venturi section upstream of a gas purification means (honeycomb catalyst).

Therefore, it would have been obvious to one of ordinary level of skill in the art at the time the invention was made to modify the invention of WO 96/37281 and include a venturi section upstream of the catalyst means (photocatalyst filter) as taught by Shiki et al. in order to accelerate the exhaust gas towards the photocatalyst filter.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 96/37281 in view of Shiki et al. as applied to claim 1 above, and further in view of Goswami (U.S. Pat. 5,835,840).

WO 96/37281 does not teach or disclose a fan means located upstream of the irradiating means for circulating the gas stream towards the irradiating means.

Goswami teaches a system for disinfecting and detoxifying indoor duct transported air in order to improve the air quality. A reactor is positioned across a duct along an airstream's path. The reactor (21) has a mesh (28) that is coated

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with a catalyst of titanium dioxide and further has ultraviolet lamps (24) for activating the titanium dioxide (see column 4). The air is drawn through the system by a fan (65) which is located upstream of the ultraviolet light irradiating means (see figure 1).

Therefore, it would have been obvious to one of ordinary level of skill in the art at the time the invention was made to further modify the invention of WO 96/37281 and move the fan (5) which is located downstream of the irradiating means to an upstream location as taught by Goswami in order to circulate the gas stream towards the irradiating means.

Arguments

8. The applicant states that the prior art fails to teach or disclose all of the features of the amended claims, specifically a venturi section. Additionally, the applicant argues that a venturi does not inherently provide a function of "constraining and increasing the velocity of the gas stream while simultaneously creating a suction effect"

Response to Arguments

9. Applicant's arguments with respect to claims 1-9, 11-13 and 19-25 have been considered but are moot in view of the new ground(s) of rejection. The newly cited art to Shiki et al. discloses a venturi section located upstream of a catalyst filter.

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The examiner respectfully disagrees with the applicant's arguments regarding the function of a venturi. According to the Merriam-Webster dictionary the definition of venturi is as follows:

Main Entry: **ven·tu·ri** 

Pronunciation: ven-'tur-E

Function: *noun*

Etymology: G. B. *Venturi* died 1822 Italian physicist

Date: 1887

: a short tube with a tapering constriction in the middle that causes an increase in the velocity of flow of a fluid and a corresponding decrease in fluid pressure and that is used especially in measuring fluid flow or for creating a suction (as for driving aircraft instruments or drawing fuel into the flow stream of a carburetor)

Based upon this definition, a reference would not be required to specifically state that a venturi section has these functions since they are inherent characteristics of a venturi and therefore, are obvious to one of ordinary level of skill in the art.

Allowable Subject Matter

10. Claims 14-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art fails to teach or suggest a photoreactor comprising a venturi section having a convergent section, a straight section, and a divergent section, wherein the UV light illuminating means and reflective means are positioned at the divergent section of the venturi.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. 5,863,413 to Caren et al. disclose an irradiating means and a venturi section for treating exhaust gases.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Conley, whose telephone number is (703) 305-2430. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Robert Warden, can be reached at (703) 308-2920. The Unofficial fax phone number for this group is (703) 305-7719. The Official fax phone number for this Group is (703) 872-9310.

When filing a FAX in Technology Center 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of the application. This will expedite the processing of your papers.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [robert.warden@uspto.gov]. All Internet e-mail communications will be made of record in the application file. PTO employees will not communicate with applicant via internet e-mail where

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sensitive data will be exchanged or where there exists a possibility that sensitive data could be identified unless there is of record express waiver of the confidentiality requirements under 35 U.S.C. 122 by the applicant. See the Interim Internet Usage Policy published by the Patent and Trademark Office Official Gazette on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist, whose telephone number is (703) 308-0661.

SEC



July 14, 2003



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SUPERVISORY PATENT EXAMINER
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